

January 2026

8th Edition

SWR

Magazine 1:1

ISSN: 3068-7233

**Happy
New
Year**

HEX BEAM

4-BAND HEX BEAM:
LIGHTWEIGHT,
EFFICIENT, AND
BUILT BY YOU

BETWEEN RADIOS AND WAVES

WHERE AMATEUR RADIO AND
NATURE MEET

Antenna Takeoff Angle

DOES IT REALLY MATTER
WHEN YOU DON'T HAVE
THE IDEAL HEIGHT?

YAESU FT5DR

THE MODERN HAND OF AMATEUR
RADIO

DX CLUSTER

THE DIGITAL DX CAMPFIRE

Introduction

On the Cover

On the image that opens our edition today, we see an imposing stack of antennas rising toward the sky from a tall tower, covered by a blanket of snow. The scene conveys not only the strength and engineering behind each installation but also the unwavering passion of the amateur radio operator. Each antenna stands as a testament to hours of dedication, patience, and perseverance, showing that not even the harshest weather can stop those who seek to connect with the world through the airwaves.



Just as these antennas defy the cold and the heights, amateur radio operators face each year with the same determination, ready to overcome challenges, explore new technologies, and strengthen the community that unites us across the globe. This cover serves as a reminder that each new year brings opportunities to grow, to learn, and to keep the flame of our passion alive, no matter the obstacles we encounter along the way.

May this new year inspire us to keep raising our antennas, to continue connecting hearts and minds, and to show that perseverance and enthusiasm are the true driving forces of our hobby.



Photo by: W2RE

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A new year is the perfect reminder that we can always reinvent ourselves and raise our signal toward higher horizons.

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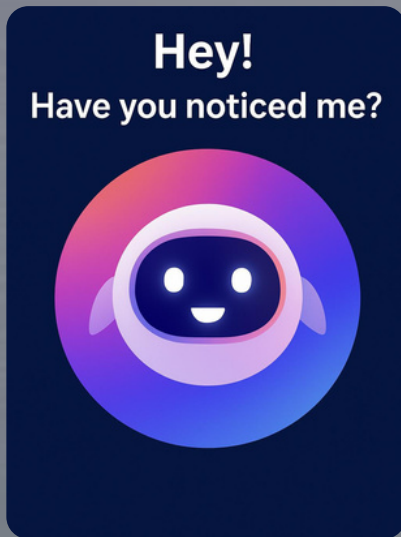
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Have you noticed this icon in SWR Magazine?

Look for it in the lower-right corner of each edition! It's our AI Chatbot: an interactive tool designed to help you explore our content. Ask it anything and get accurate answers instantly, based directly on what you're reading. Give it a try!





EDITORIAL

2026: NEW HORIZONS, SIGNALS THAT UNITE US

Photo by: Canadian Amateur Radio Operators

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W

e step together into a new year, bringing with it a stage full of challenges, opportunities, and horizons opening before us. It's incredible to think that this magazine was born only in May of last year. What began as a project driven by a passion for amateur radio has now become a solid and respected reference within our community. Each edition reflects not only information and knowledge but also the passion, dedication, and curiosity that unite us as amateur radio operators.

Since its beginnings, SWR has steadily gained ground and recognition. Every day, new subscribers join us, new contributors from different parts of the world come aboard, and new stories arrive that enrich every page. Our signal is now heard and read across virtually all continents, carrying with it the message that amateur

radio is much more than a hobby it is a network of people, experiences, and learning that transcends borders.

This growth is no coincidence; it is the result of the commitment, consistency, and enthusiasm of all of you who are part of this family. Looking ahead, we see a year filled with opportunities and challenges. New projects, collaborations, and surprises await us, motivating us to continue improving, innovating, and strengthening our connection with the global community. Every contact, every shared story, and every contribution from our collaborators reminds us that the true value of amateur radio lies in human connection, in the passion for learning, and in the joy of sharing what we know with others.

We want to extend our heartfelt thanks to every reader, subscriber, and contributor who makes it possible for SWR to continue growing. You are the ones who carry our signal beyond expectations and inspire us to raise our standards and dream bigger each day.

2026 calls us to explore new horizons, achieve new milestones, and continue building an ever-stronger, united, and global amateur radio community.

Welcome, 2026! May this year find us with strong signals, great adventures, and the indomitable spirit of those who love amateur radio.**



Photo by: QRPer



WORLD NEWS

FCC OFFICIALLY ALLOCATES 60-METER BAND FOR AMATEUR RADIO IN THE U.S.

The U.S. FCC has officially approved the allocation of the 60-meter band (5351.5–5366.5 kHz) to the amateur radio service as a secondary band, in accordance with the WRC-15 agreement. This decision aligns U.S. spectrum use with international regulations. Licensed amateurs with a General class or higher may operate on this segment with a maximum power of 9.15 W ERP and a bandwidth of up to 2.8 kHz. Additionally, the FCC will continue to authorize the use of four additional channels (5332, 5348, 5373, and 5405 kHz) at up to 100 W ERP. The new regulations will take effect 30 days after their publication in the Federal Register, expanding HF communication opportunities, especially for emergency and public service communications.



DXPEDITION TO DESECHEO ISLAND (KP5) ANNOUNCED FOR JANUARY 2026



Source: DX-World

A DXpedition to Desecheo Island (KP5), one of the rarest and most sought-after DXCC entities worldwide, has been officially announced. The operation will be led by Otis, NP4G, in collaboration with the Vieques Island Amateur Radio Club (NP3VI) and the Manyana DX Foundation.

This activation is historically significant, as it marks the first Desecheo Island expedition led by Puerto Rican radio amateurs in nearly five decades, and the first activation of the island since 2009. Due to its restricted access and unique status, KP5 consistently ranks among the top most-wanted DXCC entities.

The DXpedition will utilize self-contained remote stations, capable of operating 24 hours a day for approximately 30 days, maximizing contact opportunities across multiple bands and modes. Deployment is tentatively scheduled between January 12 and 14, 2026, subject to weather conditions and environmental permits.

The primary goal of the operation is to provide an ATNO (All-Time New One) to as many radio amateurs as possible worldwide, reinforcing the team's commitment to the spirit of DXing, international cooperation, and technical excellence that defines this type of expedition.



WHERE AMATEUR RADIO AND NATURE MEET

By: Jose M. Candelaria NP4ET

Saturday, December 6, will be remembered as one of those days that remind us why we love amateur radio so much. On that day, several members of the Caribbean Amateur Radio Group gathered at the Finca Nolla Nature Reserve in Camuy, Puerto Rico, with a simple yet powerful purpose: to experience a POTA event that would bring us back to the essence of this wonderful hobby and, at the same time, close the year connected to what truly matters—community, friendship, and passion for the airwaves.

We arrived loaded with equipment, backpacks, and smiles. From the very first minute, the atmosphere hinted that we were about to experience something special. Some walked straight to the beach, admiring the deep blue of the sea; others scanned the tall trees, searching for the perfect spot to set up the station. And there, between two tree trunks that seemed to be waiting for us, we found the exact place where the magic would happen.



But a POTA isn't just about radio... it's also about family.

It didn't take much to get everything running: a homemade fan dipole carefully crafted by amateur hands; a reliable Yaesu FT-991, ready to show why it's one of those radios that never fails; and, of course, everyone's energy, the invisible engine that turns a simple outing into an unforgettable experience.

As the wires were laid out, the dipole elements adjusted, and the readings checked, the beach spoke to us in its own language: gentle waves, fresh breeze, and a sky so blue it looked painted. It was impossible not to feel privileged to operate radio from such a place. And even before starting operations, we already knew this would be a day to remember.



But the most beautiful thing about a POTA is that it's not just about radio. It's about togetherness. It's about friendship. It's that family spirit that awakens when passion is shared.

Next to the station, an improvised grill appeared, and soon hamburgers and hot dogs were cooking. The aroma mingled with the breeze, and amid laughter, anecdotes, inside jokes, and technical comments, a true sense of fellowship emerged. Everyone contributed something: an adjustment, a tool, advice, a dish, a story. That perfect blend that only happens when amateur radio is experienced as a community.

When we finally powered up the equipment and started calling, propagation smiled upon us like few times before. It was one of those openings that seem orchestrated by the heavens themselves. The 10m, 15m, and 20m bands were vibrant, alive, and receptive. One by one, the contacts began to roll in.

United States.

South America.

Europe.

More than 100 contacts in a day that became a dance of signals, voices, and reports. Each QSO was a bridge built. Each operator on the other end was another piece in that invisible network connecting the world. And each confirmation filled us with a satisfaction that's hard to describe a blend of effort, passion, and nature working in perfect harmony.

While operating, some lounged under the generous shade of the trees, enjoying the view of one of Puerto Rico's most beautiful beaches. Others explored the area, amazed by what the reserve has to offer. And some simply stayed nearby, observing, learning, and sharing. Because that's what amateur radio is: a space where everyone has something to contribute, something to learn, something to enjoy.

And so, amid the sound of the sea, the crackle of the grill, the distant voices from contacts, and the murmur of our own conversation, something bigger than a POTA formed. It became an experience that renews us, reminds us why we continue here, and drives us to keep exploring, innovating, and sharing.

That day, Finca Nolla was not just a nature reserve.

It was our meeting point with the essence of amateur radio.

It was a reminder that beyond the equipment, antennas, and bands, what truly makes this hobby great is the people. It's us. Our community. Our desire to connect not just through frequencies, but through experiences that leave a mark.



Today, as we begin a new year and open this January edition of SWR, we want to share this story with you, dear reader, because we know you are also part of this global community. This chronicle not only tells what we did... it also celebrates who we are.

May 2026 find us with more activations, more projects, more learning, more contacts... and above all:

more moments like this, where amateur radio reminds us that in a world so vast, there is always a frequency that unites us.



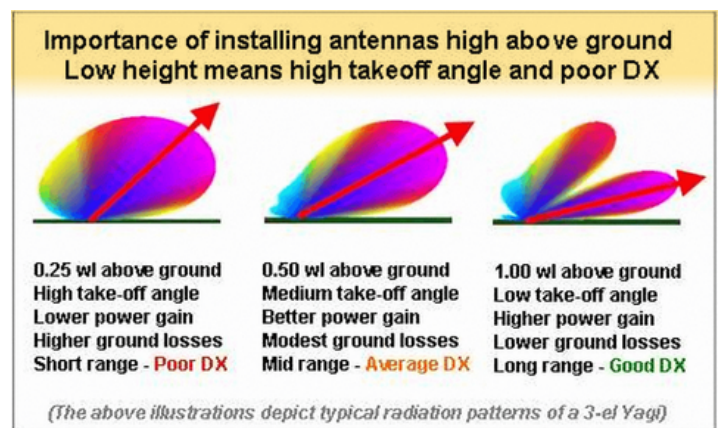
Antenna Takeoff Angle: Does It Really Matter When You Don't Have the Ideal Height?

By: Juan Montijo WP4OV

In the world of HF communications, especially for DX hunting, few concepts are as discussed and easily misunderstood as an antenna's takeoff angle. Many amateur radio operators worry that their antenna isn't high enough to produce the low-angle radiation needed for long-distance contacts. But how much does this angle really matter when real-world space limitations prevent achieving the "ideal" height? The answer is more encouraging than it seems.

Understanding the Takeoff Angle

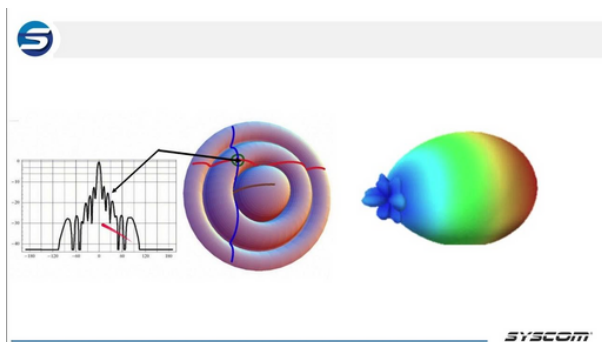
The takeoff angle (TOA) is the elevation angle at which most of the energy radiated by your antenna propagates. Low angles (5–20 degrees) are best for DX because HF signals travel farther when they gently refract through the ionosphere. Higher angles (45–90 degrees) favor regional NVIS (Near Vertical Incidence Skywave) communication.



The classic “half-wavelength height for optimal performance” formula is excellent in theory, but on 40 meters that means about 20 meters—far beyond what most amateur radio operators can achieve. Most home installations simply cannot reach these heights.

between 4 and 10 meters. At these heights, NVIS lobes develop, and low-angle energy is significantly reduced.

But here’s the good news: reduced doesn’t mean eliminated. Even low antennas retain some low-angle radiation. Most daily DX contacts, especially on 20 meters and higher, are made with antennas mounted well below the “ideal” height.



What Happens When the Antenna Is Lower?

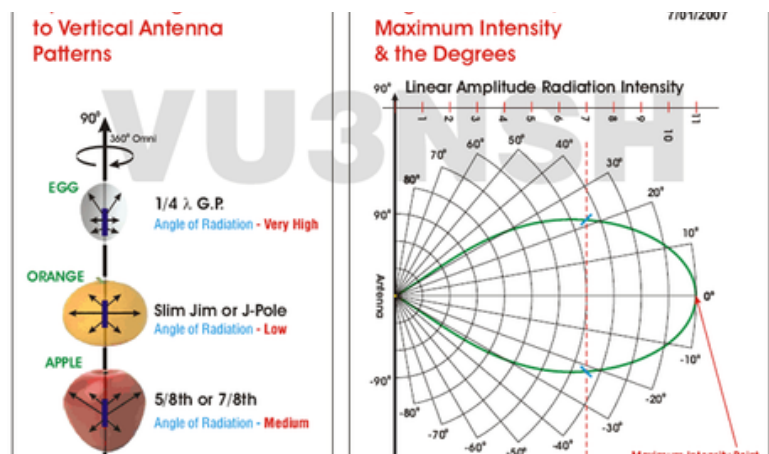
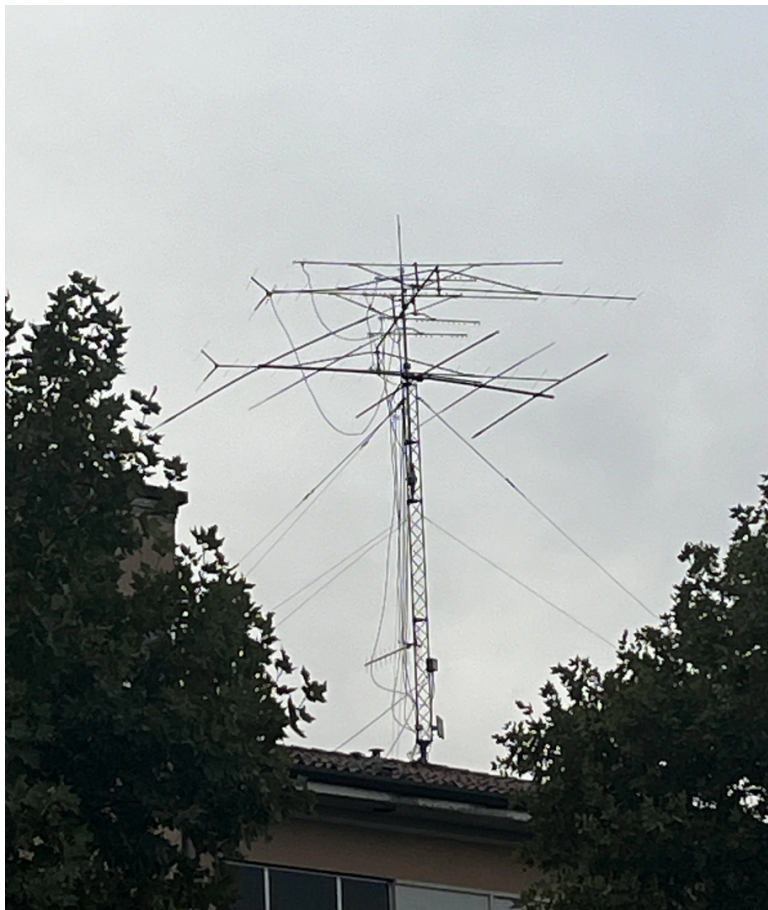
A dipole mounted at 0.1–0.25 wavelengths tends to radiate at much higher angles. On 40 meters, that means heights

Why DX Is Still Possible with Low Antennas

Several real-world factors favor DX even with non-optimal takeoff angles:

Propagation windows are dynamic.

The ionosphere often supports mid-angle refraction, especially during high solar activity.



Modern transceivers and power compensate for reduced antenna gain. Even a few dB difference in low-angle radiation can be easily offset. Ground conductivity also plays a role a good soil or proximity to the sea improves low-angle radiation.

Band selection works in your favor.

For example, 20 meters is much more forgiving of low antennas than 40 or 80 meters. Terrain can also help, sometimes dramatically—a downhill slope in front of your antenna can lower the effective TOA by several degrees.

In summary: height matters, but not as much as many believe.

What About Adding a Reflector Wire Below the Dipole? A simple trick that can help shape radiation is to place a horizontal reflector wire beneath the dipole. This technique, similar to a two-element directional antenna, can slightly lower the takeoff angle by redirecting energy outward rather than upward.

Recommended separation: 0.05–0.1 wavelengths. For example:

- On 40 meters: 2–4 meters
- On 20 meters: 1–2 meters

The reflector wire doesn't need to be perfectly resonant, but making it about 5% longer than the dipole is ideal. It won't turn a low dipole into a high-performance DX antenna, but it can provide a measurable improvement in gain and takeoff angle.

Conclusion

Even if your antenna is far from the “ideal height,” you can still achieve DX contacts, often with excellent performance. The ionosphere, terrain, and band conditions influence propagation more than most amateur radio operators realize. Use the height you have, optimize what you can, and remember: thousands of operators make DX contacts every day with antennas lower than those recommended in the books.

Photo by: Reddit

DXpeditions

Every DXpedition is much more than a radio operation: it is a demonstration of passion, patience, and dedication. Amateur radio operators who venture to remote locations face harsh climates, unfamiliar terrain, and technical challenges, all with the purpose of bringing their signal to distant corners of the planet. Each contact made represents not only the operator's skill but also the ability to connect people and cultures through radio, reminding us that perseverance turns the difficult into the possible.



01.

AU7RS Agatti Island

The AU7RS team will be active from Agatti Island, Lakshadweep Islands, IOTA AS-011, from January 10 to 22, 2026.

Team: VU2RS, VU24DX, VU3DXA, VU3GDS, VU29AR, EY8MM, DL6KVA, YT1AD, R7KW, DJ5IW, VU2DWA.

Latest DX Spots: AU7RS

They will operate on bands from 160 to 10 meters.

QSL via M0OXO, OQRS.

01

The Laccadives (Lakshadweep), an impressive archipelago hidden in the waters of the Arabian Sea. These exotic Indian islands are famous for their snow-white sandy beaches, incredibly vibrant coral reefs, and crystal-clear waters. This place is often referred to as the Maldives of India, as it is ideal for escaping the hustle and bustle of the city and immersing oneself in an atmosphere of peace and serenity.

When talking about the Lakshadweep Islands, the first thing to clarify is their geographical location. The Laccadives, or Lakshadweep Islands, are a group of islands scattered across the vast expanse of the Indian Ocean.

Their exact location is west of the Indian Peninsula, just beyond the magnificent Maldives. The archipelago gets its name from the ancient Sanskrit term "Laksh," which translates to "one hundred thousand." This chain of 36 islands attracts tourists with its natural beauty and diverse ecosystems.



02.

Z81D South Sudan

Diya, YI1DZ, will be active as Z81D from Juba, South Sudan, starting December 14, 2025.

He will operate on bands from 40 to 6 meters, using SSB, FT8, and possibly 80 and 60 meters.

Latest DX Spots: Z81D

QSL via: OM3JW, LOTW, ClubLog

For direct QSL, send to:

STEFAN HORECKY, MLYNSKA 2, 900 31
STUPAVA, Slovak Republic.



02

South Sudan, officially known as the Republic of South Sudan, is the youngest country in Africa. It gained independence in 2011. The nation shares land borders with Ethiopia, Kenya, Uganda, the Democratic Republic of the Congo, Sudan, and the Central African Republic. South Sudan is a landlocked country.

The capital of the country is the city of Juba, located in the heart of Africa. According to 2011 data, the population is 372,400. For comparison, in 2007 the population was significantly smaller, at 172,700.

03

Colombia can safely be considered one of the most interesting and vibrant countries in South America. Its name is associated with Christopher Columbus, who was the first to discover the continent.

Archaeological excavations confirm that people inhabited this territory from the 15th to 12th centuries BCE, making its history truly fascinating. One of the most interesting periods, which had a huge impact on the country's formation, was the era of Spanish colonization. For this reason, Spanish is today the official language of the country.

03.

HK3JCL Colombia

Lothar, DK8LRF, will be active again as HK3JCL from Colombia, from September 3, 2025, to May 15, 2026.

He will operate mainly on 20m SSB.

Latest DX Spots: HK3JCL

QSL via: his primary callsign

For direct QSL, send to:

Lothar Froehlich, Am Isental 25, 84424 Isen, Germany.

QTH: Finca Ligia

QTH Locator: FJ34fg



WORW/pm
Indy Pass, Colorado 12,000 feet.



How to Operate Pedestrian Mobile

Exploring the Airwaves on the Move:
The Adventure of Operating HF in the
Great Outdoors

By: Paul R. Signorell WORW

Amateur Radio on the Move: Taking Your Station to Trails and Mountains

It's truly exciting to operate HF while walking through your favorite natural areas. Operating "Pedestrian Mobile," which I'll call "/pm," is a very challenging and rewarding activity, especially using QRP. It's hard to explain /pm to amateur radio operators from other countries, so sometimes I tell them I'm operating "Back Pack Mobile" or "Walking Mobile." You no longer have to look for trees to support your antenna; now you'll be looking for trails without trees.

Radios

Let's start with choosing the radio. You'll probably want to use one you already have; you just need to set it up for trail operation. You'll need a good backpack (like a military ALICE Frame Pack) or a shoulder bag (Bergen) that can hold your radio with its battery, an ATU, and possibly a Morse key. The easier it is to fit everything into a single bag, the easier it will be to use—and the more you'll actually use it.

A radio with low receive power consumption is essential.

CW or SSB

QRP SSB on a short antenna is a real challenge during the years of solar minimum. Soon it will be very easy to work DX on 10 meters with low power, but 20 watts are really the minimum needed for successful SSB/pm operation on the lower bands today. CW has great advantages (as QRP enthusiasts know). QRP/pm is doable, but you'll need to be able to copy CW in your head and start sending CW while walking. This will force you to copy whole words, not letter by letter. PSK/pm and RTTY/pm work well, but the duty cycle is much higher. The NUE-PSK modem can be used without a computer or keyboard for these modes.



WORW/pm
St. Elmo, CO



WORW/PN

GARDEN OF THE GODS
COLORADO

Connecting the World from Any Trail: The Magic of Pedestrian Mobile

Recommended Backpack Radios

I use the military PRC319 radio. It's ready for /pm right out of the box and can transmit in SSB and CW. It can deliver 5 or 50 watts, but at 50 watts CW, the battery doesn't last long. It weighs 11 kg (25 lbs), a bit heavy for a backpack radio, and only operates on fixed frequencies. I've worked 217 DXCC entities with this radio using a 3-meter (10-foot) antenna.

Another favorite of mine is the Elecraft KX1-4 transceiver. This small yet powerful radio works on 80m, 40m, 30m, and 20m. The KX2 and KX3 models are even better, with everything integrated. Other hams use radios like the FT817, IC706, and Penntek TR-35. The TX-500 MP would also be easy to operate.

Antennas

I use a 3-meter (10-foot) antenna with a center loading coil. The antenna is mounted on the backpack frame for backpack radios, or I use a shoulder antenna support for shoulder bag or portable radios like the KX1.

The loading coil is usually 1 to 1.2 meters (3–4 feet) above my head. My loading coil is wound around a nylon fuel filter. Antennas longer than 3 meters are more difficult to carry while walking.

The antenna also requires a counterpoise, which I call the "drag wire." The drag wire length should be approximately 10% shorter than a quarter wavelength. The drag wire should have a detachable connection, such as a banana plug. On mountain peaks at 4,200 meters (14,000 feet), I always use a shorted quarter-wave stub as the drag wire to protect my radio input from static caused by precipitation. I never use a drag...



Photo by: vk3ye

HF on the Go: Amateur Radio That Joins You on Your Adventures

wire longer than 9 meters (30 feet) becomes difficult to handle.

The simplicity of tuning with an automatic tuner is perfect for /pm operations. Tuning is done once and usually isn't adjusted unless you move over different terrain, such as snow or saltwater. The radio should connect to the tuner via coax, while the antenna connects to the tuner with a single high-voltage wire. The counterpoise wire goes directly to the tuner ground.

Before taking your equipment out for the first time, place it on a wooden ladder and tune your antenna/drag wire with an antenna analyzer or for maximum reading on a field strength meter. This ensures that your few watts are transmitted efficiently into the ether and can prevent damage to simple equipment that needs to see a 50-ohm load.

Batteries

This is a great opportunity to leave behind heavy SLA batteries. New Lilon cells provide /pm operators with twice the energy at half the weight of a NiCad pack. I don't use LiPoly packs because they are harder to handle. I use Sony hard-carbon Lilon cells. The new A123 lithium iron phosphate cells are also excellent.

You'll probably need a new Lilon charger. I've been using Batteryspace.com for my Lilon cells and chargers. BuddiePole also offers LiFePo4 packs. NiCad and NiMH cells are still popular but are a bit heavier for the same portable energy.

Locations

As they say in real estate, location is everything. The best places to operate are mountain tops and ridges. Deep valleys are not ideal. I've had the opportunity to operate /pm from national



Photo by: QRPer

From Backpack to the Airwaves: Operating HF While Enjoying the Scenery

parks, beaches, inside volcanoes, on the Colorado Trail, and the Santa Fe Trail. These /pm locations are generally free of power lines.

Dangers

There can be dangers when operating /pm if you're not careful. Possible issues include RF burns on your hand or ear, lightning, runners, horses, coyotes, bears, etc. Once a bear approached me while I was working Estonia on 20 meters at midnight with my KX1.

The good news is that interesting things can happen. Once, while walking at night operating on 80 meters CW, I noticed a house light blinking. It was me! I was activating an SCR inside the nearby house.

Safety

Do not allow older individuals to be nearby while transmitting until you are sure they do not have implanted medical devices, such as defibrillators or pacemakers. You can check your RF safety using the RF Exposure Calculator at:

<http://arri.org/rf-exposure-calculator>

Do not operate near low-voltage power lines or during thunderstorms.

See you on the trail.

Paul w0rw



YAESU FT5DR



Photo by: Yaesu.com

By: SWR Editorial Team

The Modern Hand of Amateur Radio

In a world where amateur radio has evolved from simple analog talk-around communications into a complex fabric of digital modes, networks, mobility, and emergency operations, the Yaesu FT5DR emerges as a bridge between the past and the future: a modern, fully featured handheld transceiver designed for those who seek power, versatility, and reliability all in a compact form factor.

What does the FT5DR offer?

The FT5DR stands out for its combination of advanced features that make it far more than just a simple "walkie-talkie":

- True dual-band operation (VHF + UHF) with independent dual receivers – Allows operation on 2 m (144 MHz) and 70 cm (430 MHz) in multiple combinations (V+V, U+U, V+U, U+V), enabling simultaneous monitoring of two different bands without the need to switch equipment.

- **Analog and Digital Compatibility** — Beyond classic FM/AM, it integrates Yaesu's C4FM digital fusion mode, featuring modern functions such as Automatic Mode Select (AMS), Digital Group ID (DG-ID), and smart navigation. This enables seamless operation on both traditional analog networks and digital infrastructure.

- **Wide Receiver Coverage** — Its receiver spans from 0.5 MHz up to nearly 1 GHz (Band A) and from 108 to 580 MHz (Band B). This makes it a versatile tool not only for amateur radio but also for radio scanning, aeronautical monitoring, AM/FM stations, emergency communications, and more.

- **Adjustable Power and Strong Audio** — Offers RF output up to 5 W (selectable 5 W / 2.5 W / 1 W / 0.3 W) and 1 W audio, providing clear communications in the field or noisy environments.

- **Color Touchscreen with Modern Interface** — A high-visibility TFT color display allows easy navigation through frequencies, memories, and functions; the frequency color on-screen is even customizable.

- **Built-in GPS + APRS + Data** — Features a 66-channel high-sensitivity GPS receiver along with an APRS data modem (1200/9600 bps), adding capabilities for positioning, tracking, data exchange, and messaging. Perfect for outings, expeditions, mobile networks, or emergency situations.



- **Additional Useful Features** — Micro-SD card slot, voice recording, VOX, hands-free operation via optional Bluetooth, "Band Scope" for monitoring up to 79 channels simultaneously, automatic memory, band hopping, and rugged construction with water and shock resistance (IPX7 rating on many versions).

Who is it for? — What type of ham operator will value it?

This equipment is especially suited for:

- **Mobile or nomadic amateur radio operators:** If you operate from various locations — countryside, mountains, travels, outings, or expeditions — its portability, ruggedness, reliable battery, and GPS/APRS capabilities make it ideal.

- Users combining analog and digital: If you participate in modern networks, digital nodes, or want to switch from traditional FM to C4FM, this transceiver offers the best of both worlds.
- Active listeners or “human scanners”: Its wide receiver range makes it perfect for monitoring amateur radio, broadcast stations, public services, aeronautical traffic, emergencies, or simply discovering interesting signals.
- Emergency-focused operators, portable DXers, or outdoor activators: GPS, APRS, dual-band operation, adjustable power, water resistance, and a strong battery make it extremely useful in scenarios with limited infrastructure.
- Amateurs seeking simplicity + future-proofing: For those starting in ham radio but wanting a rig with growth potential — or for those looking for a second “serious HT” to complement their primary equipment.

What it represents for today’s amateur radio

The Yaesu FT5DR embodies several milestones in the evolution of amateur radio:

- Convergence of Tradition and Digitalization: By combining classic modes with digital capabilities (C4FM, APRS, GPS), this model reflects how amateur radio adapts to new technologies without losing its roots.
- True Portability without Sacrificing Power: It transforms what has traditionally been a fixed or semi-portable station into a handheld device — while retaining many functions of a base station.



- Accessibility to Advanced Features: What once required multiple devices or separate stations now comes in a single unit — ideal for those who want to simplify their shack, save space, or get started without investing in numerous pieces of equipment.
- Flexibility for Different Operating Styles: From outdoor activations to digital nets, monitoring, emergency communications, mobile operation, or expeditions — the FT5DR adapts seamlessly.

Conclusion

The Yaesu FT5DR is not just “another HT on the market”: it is a testament to the direction amateur radio is heading. With its compact, rugged, and versatile design, packed with both analog and digital features, it provides a solid platform for newcomers as well as veteran operators seeking mobility, flexibility, and performance. This transceiver proves that amateur radio remains alive—evolving, adapting, and preserving its spirit of exploration and community—now right in the palm of your hand.

Welcome To HamCation 2026

Central Florida Fairgrounds and Expo Park
February 13th - 15th, 2026



Host of the ARRL Southeastern Division Convention



Located in Orlando, Florida

**HamCation isn't just a trade show.
It's a vacation destination for the whole family!**

Banquet Info

Please join us and enjoy an evening celebrating amateur radio with a locally inspired Farm-to-Table menu, great company, the presentation of the annual HamCation Awards, and a Keynote.

About HamCation 2026

Come to one of the world's largest hamfests, where we pride ourselves on delivering a high-quality event to our attendees. Join us February 13-15, 2026 in beautiful Orlando, Florida for HamCation 2026.

Prizes, Prizes and More Prizes!

We gave away some great prizes for HamCation 2025. What does 2026 have in store? WHO knows...

Important HamCation Info!

On our website, you'll find all the information you need to make your HamCation experience the best it can be. Here are our most useful links.

Click here for more information:

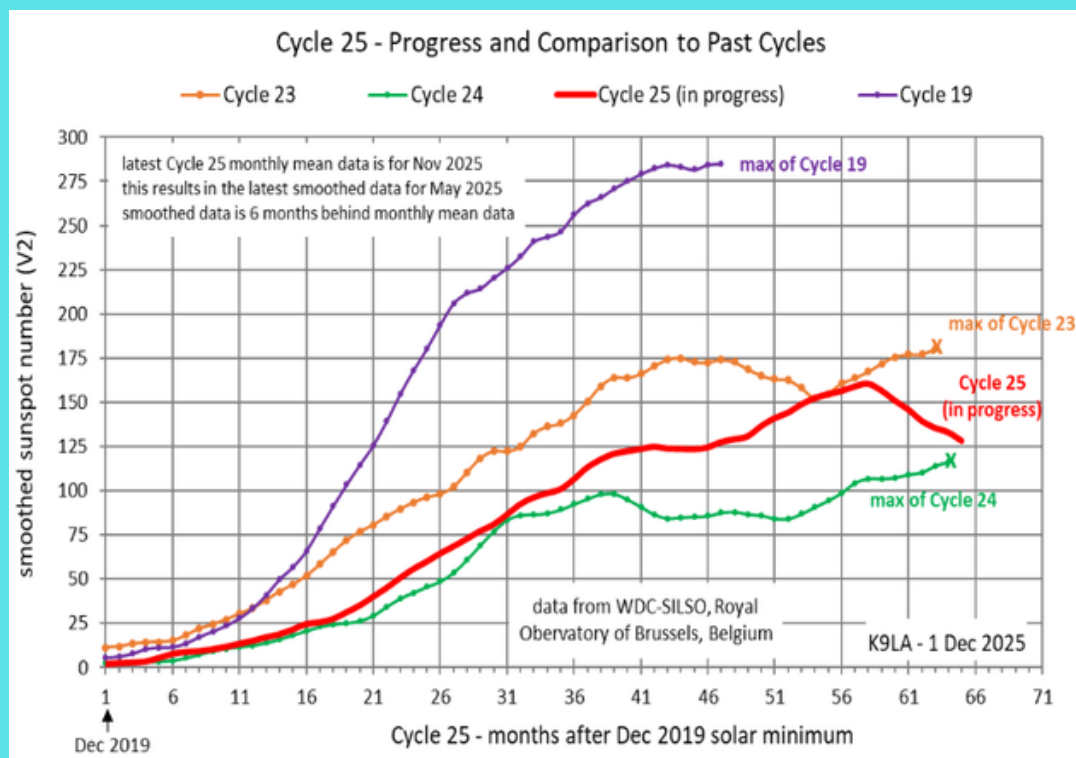
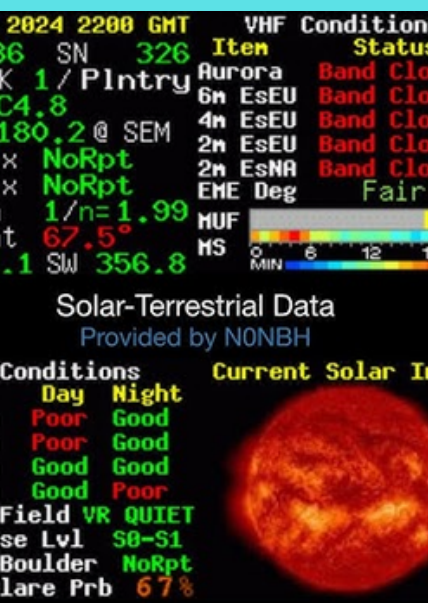


SWR Magazine HamCation 2026 North Building - Booth #185 Come and join us

The Awakening of Solar Cycle 25!

By: Carl Luetzelschwab K9LA/ZF2LA

SOLAR CYCLE 25 IN ACTION! UPDATE THROUGH NOVEMBER 2025



Solar Cycle 25 officially began in December 2019, when the smoothed sunspot number reached its historic minimum. This carefully averaged calculation, designed to eliminate daily and monthly spikes, marks the beginning of a new chapter in the amateur radio adventure. Carefully averaged to eliminate daily and monthly spikes, it marks the start of this exciting new phase.

Today, five and a half years after the solar minimum, we remain alert to every signal from the Sun that can turn our HF bands into pathways for global connections.

Comparing with Past Giants and Lows

The attached image shows the progress of Solar Cycle 25 (thick red line) alongside three historical cycles:

- Cycle 24 (green): a small cycle, with a smoothed sunspot maximum of 116. The smallest in our lifetimes and the fourth smallest on record.
- Cycle 23 (orange): reached just over 175, close to the historical average of 179.
- Cycle 19 (purple): the all-time giant. Its peak enabled exceptional worldwide propagation on the higher HF bands.

Solar Cycle 25, though not a giant like Cycle 19, has already delivered exciting moments and unique opportunities to chase DX across the globe.

Peak of Solar Cycle 25: Almost an Average Cycle... but Full of Action

Solar Cycle 25 reached its peak in October 2024 with 161 smoothed sunspots. While not record-breaking, this cycle nearly hits the historical average and offers spectacular days on the higher HF bands. The chances of a second peak are low, but every signal received remains an adventure.

Worldwide Propagation: Time to Get on the Radio!

Although not a massive cycle, Solar Cycle 25 has shown its power:

- Excellent propagation on 15, 12, and 10 meters during northern hemisphere autumn and winter.
- Surprises on 6 meters, thanks to the F2 region of the ionosphere.

During the first months of 2026, daily propagation on the higher HF bands will continue to provide opportunities for DX, contests, and unforgettable contacts. Summer will bring challenges: the F2 region weakens and electron production drops, but that only makes the anticipation for the best conditions more exciting!

Looking Ahead to 2026/2027: Excitement Guaranteed

We expect the smoothed sunspot number of Cycle 25 to remain high enough during autumn and winter of 2026/2027 to keep the higher HF bands open daily. Meanwhile, every contact is a prize, every QSO a reminder that the amateur radio adventure never stops.

Tips to Make the Most of the HF Bands

You don't need huge power or complicated antennas to enjoy Cycle 25:

- Moderate power: 100 watts
- Simple antenna: dipole or inverted-vee at 6–9 meters high

With this setup, you'll have endless opportunities to complete your WAS, DXCC, and WAZ, and POTA operations on these bands promise unforgettable moments.

Solar Cycle 25 will have a peak SSN of 115 (± 10) in July 2025

Solar cycle 24/25 minimum will occur in April, 2020 (± 6 months)

Voices That Span the Globe



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Photo by: S21DX

ON THE AIR

AMATEUR RADIO CONTESTS THIS MONTH

ARRL RTTY ROUNDUP

Dates: January 3–4, 2026
Modes: RTTY / Digital
Participants: USA, Canada, and DX
Exchange: RST + state/province (USA/Canada) or serial number (DX)
Note: One of the first contests of the year; very active on digital modes.

CQ 160-METER CONTEST (CW)

Dates: January 23–25, 2026
Mode: CW
Participants: Worldwide
Exchange: RST + state/province/country
Note: Focused exclusively on 160 m; excellent for nighttime DX.

UBA PSK63 PREFIX CONTEST

Dates: January 10–11, 2026
Mode: PSK63
Participants: Worldwide (including SWLs)
Exchange: RSQ + serial number (DX) / RSQ + UBA section (Belgium)
Note: Low power (max. 50 W); ideal for digital operators.

NAQP CW – NORTH AMERICAN QSO PARTY

Dates: January 10–11, 2026
Mode: CW
Participants: Mainly North America; DX stations may participate
Exchange: Name + state/province/country
Note: Max. 100 W; fast-paced and very dynamic contest.

**GET READY FOR THE FIRST
CONTESTS OF THE YEAR!**



By: Hamilton K. Agnew, K4HKA

The Wizards of Radio

It all began with a dream. As a child, John Wells imagined secret staircases, hidden rooms, and radio stations that could connect the world. Born in 1903 in Southbridge, Massachusetts, John not only inherited his family's curiosity but transformed it into a passion: amateur radio. His nickname among hams, "The Wizard of Southbridge," reflects his talent for turning imagination into real inventions.

In 1940, John partnered with Clifford A. Harvey, an extraordinary MIT-trained electrical engineer and fellow amateur radio operator, to found the Harvey-Wells Electronics Company. The combination was perfect: Harvey built, designed, and experimented; Wells dreamed, researched, and connected each project to the wider world. Together, they pushed innovation to unimaginable limits.

During World War II, Harvey-Wells pioneered radar equipment, contributing to Allied security and the development of advanced communication systems. Their high-quality transmitters and receivers...

...not only served military purposes but also laid the foundation for postwar amateur radio.

In 1947, the company launched its first ham transmitter, the TBS-50, followed by continual improvements: the TBS-50A, B, C, and D, always guided by the same philosophy—maximum quality and reliability. Later came the R-9A Bandmaster Receiver and the T-90 Transmitter, combinations dreamed of by any amateur radio operator. Many of these units still operate today as if new, a testament to the ingenuity of their creators.

John Wells didn't stop at building radios. He invented telephone communication systems connected to radios, remote-controlled garage doors, lawn mowers, and a myriad of electronic gadgets that seemed straight out of science fiction



of their time. Every project bore his mark: curiosity, precision, and a deep love for technology.

Despite adversities, such as the 1955 floods that destroyed part of the factory, the passion of Wells and Harvey never waned. They proved that dreaming and creating can change the world. Today, Harvey-Wells equipment is more than just radios: they are pieces of history, reminders of a time when every QSO was an adventure and every invention a step toward the impossible.

As John Wells said, if you follow your dreams, you will find happiness and become your own wizard. After all, radio is not just waves and frequencies; it is the story of those who dared to imagine.



Yaesu FT-901

The Nostalgia Nook

Yaesu FT-901, un gigante de la HF

For many amateur radio operators, the Yaesu FT-901 is more than just a transceiver: it is a symbol of discovery, learning, and passion for the HF bands. Released in the late 1970s, this rig represented a significant leap in technology and accessibility, combining ruggedness, versatility, and that “real equipment” feel every ham longs for. The FT-901 stands out for its clean, functional panel, with large knobs and a precise tuning dial.

Every adjustment from power output to band alignment was a ritual that brought the operator closer to the signal in an intimate way. For many, turning the FT-901's dial was almost a meditative experience, listening as each kilohertz resonated through the antenna.



The FT-901 offered warm, natural audio on SSB and CW, and clear reception that allowed operators to appreciate the nuances of every transmission. Its RF final stage and built-in preamplifier delivered that distinctive “Yaesu sound” that still brings a smile to anyone who hears it today.

It wasn't just a piece of operating equipment; it was a hands-on electronics lesson. Adjusting filters, calibrating bands, connecting antennas, and understanding its inner workings taught operators the value of precision and patience. Many hams fondly remember their first hours in front of the FT-901, experimenting with modes, antennas, and their initial international contacts. The FT-901 witnessed countless DX contacts and QSLs. Every connection with another part of the world was a tangible achievement, and receiving the confirmation postcard was a reward that reinforced the magic of amateur radio. Operating the FT-901 on those quiet nights, listening to the signal of a distant station, felt like holding the world in the palm of your hand.

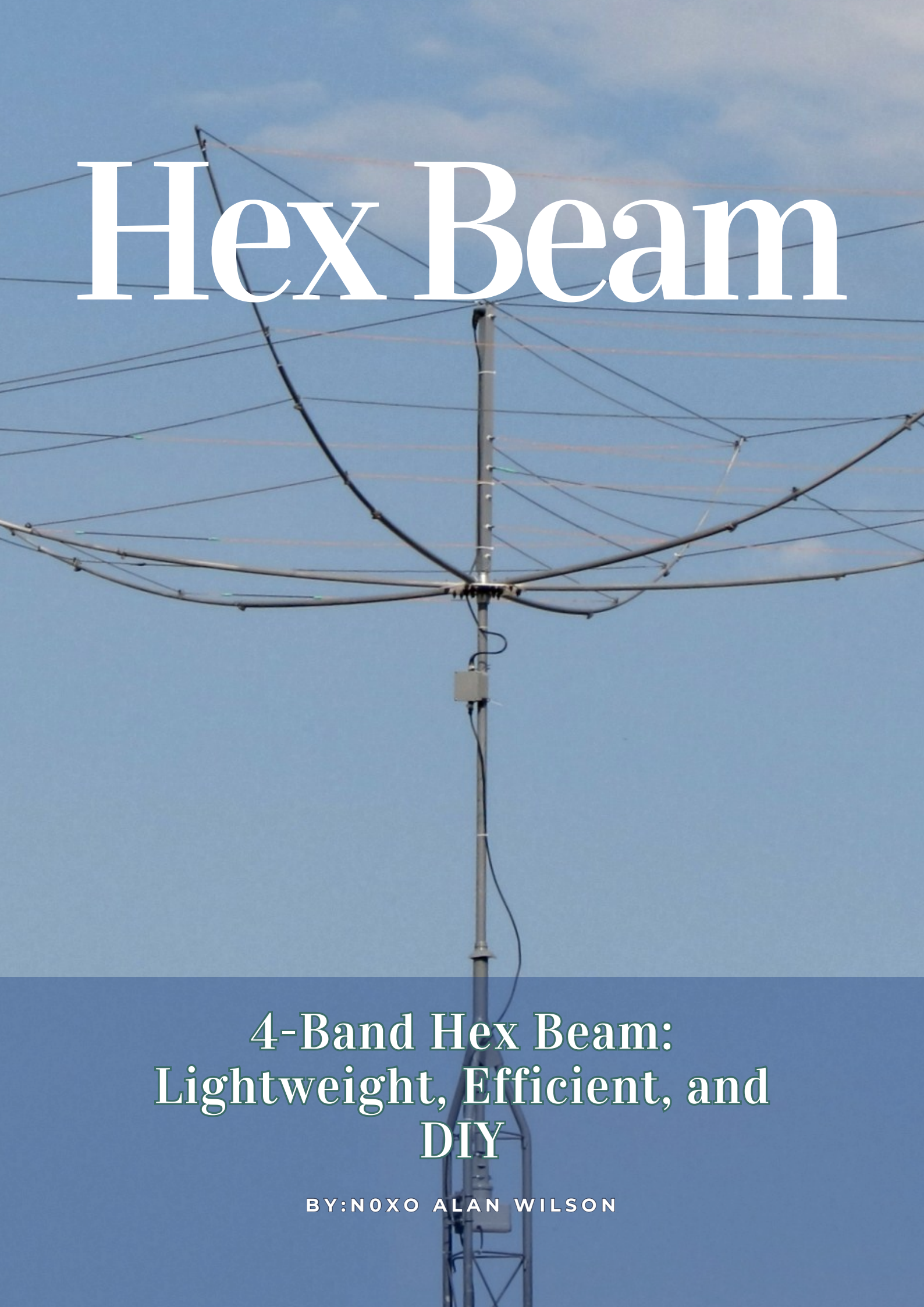
Today, seeing an FT-901 at a station or club brings back memories of the golden era of HF. Every turn of a knob, every completed QSO, evokes the thrill of those days when amateur radio was an adventure, and each contact meant more than words: it was a human, technical, and emotional connection.



Photos by: foxtango.org

By: SWR Editorial Team

The Nostalgia Nook



Hex Beam

4-Band Hex Beam:
Lightweight, Efficient, and
DIY

BY:NOXO ALAN WILSON

Introduction

Wanted: an HF antenna small, lightweight, affordable, and easy to build. Enter the broadband Hex Beam! The eternal quest for the perfect antenna: something that performs well beyond its size without turning your backyard into a wind farm or your bank account into a desert.

I first heard about the Hex Beam at the Huntsville, Alabama Hamfest, thanks to Traffie Technology. It looked impressive like a UFO ready to capture signals. At the time, however, I was already preparing to move to Montana, so I grabbed a brochure and tucked it away for a “rainy day” (or in Montana terms, a snowy apocalypse). Living in western Montana is a dream: majestic mountains, fresh air, and zero traffic... except when you’re trying to break pileups on 20 m and the higher bands to snag European stations. Hams in the eastern U.S. always seemed to have the edge, probably sipping coffee while their mega-arrays did all the work.



My trusty 20–6 m hybrid quad had been a loyal companion for years, but now it felt like a slingshot in a cannon fight. I needed more gain without adding extra weight or turning the installation into a sail for the next storm.

I began searching the web for antennas that wouldn't require a second mortgage or an engineering degree. I came across the Hex Beam user group (<http://groups.yahoo.com/group/hex-beam/>), but Yahoo Groups shut down in 2020, like a forgotten relic from the dial-up era. Don't worry—today there are alternatives on Reddit ([r/amateurradio](https://www.reddit.com/r/amateurradio/)) or on groups.io by searching for “hex beam enthusiasts.”



When I saw the prices of commercial Hex Beams, I knew I'd never convince the XYL (ham shorthand for “dear wife”) to approve that kind of expense. So I started looking for DIY options. Several websites offered guides for building a multiband Hex Beam, and although it looked about as complicated as solving a Rubik's Cube blindfolded, I stuck with it, soaking up every detail like a sponge. Then, bingo! I found posts about the Broadband Hex Beam under development by the legendary G3TXQ (SK), offering more gain and a construction process that didn't require cursing in Morse code. “This could be the one,” I thought, already imagining triumphant DX contacts.

For anyone wanting to venture down this path, I highly recommend visiting karinya.net/g3txq/hexbeam, where Steve Hunt (G3TXQ) left all his research on the BBHB (Broadband Hex Beam). It's like the antenna Bible—minus the plagues. I also visited Leo Shoemaker's site at www.hex-beam.com, where his step-by-step guide remains intact. I chose a four-band version: 20, 17, 15, and 10 m, skipping 24 MHz, which never really appealed to me.

Step 1: Gathering the Parts

Sourcing all the materials according to Leo's plans was an adventure in itself—think Indiana Jones, but with more eBay and fewer booby traps. These days it's much easier, thanks to the abundance of online suppliers:



- Fiberglass spreaders: eBay or [MGS4U Hexbeam Fiberglass Kit](#)
- Drilled base plate: [hexkit.ronmott.net](#)
- Wire, Dacron, and Kevlar cord: [The Wireman](#)
- Connectors and clamps: local stores or Amazon

I got the spreaders at a bargain and sourced the base locally, though it turned out sturdier than expected, which required some screw adjustments and adding a bit of extra weight. A ham friend with a workshop helped me mark and drill the base.

The budget is around \$200–\$300 if you buy everything new; I reused some parts to save money, but remember: “cheap” can sometimes mean “hidden headaches.”

Step 2: Construction

I followed Leo’s plans to the letter, making small tweaks at the end, like a mad scientist perfecting his creation.

- Drilled the base plate and secured the mounting bracket.
- Installed the central PVC conduit as the backbone.
- Measured and painted the spreaders black to protect them from the sun.
- Prepared and labeled the director and reflector wires.
- Made spacers using Dacron cord and Radio Shack connectors.

- I adjusted the U-shaped spreaders and installed the radial and perimeter cords.
- There were moments of improvisation: threading the screws through the mast felt like wrestling an octopus. An old piece of fiberglass wire solved the problem in five minutes. Measuring and labeling multiple times helped avoid mistakes and tangles.

Step 3: Testing

Finding a suitable mast was a challenge. Finally, I mounted the Hex Beam on a pole and tested the antenna:

- Excellent performance even at low height.
- Wide bandwidth with strong lateral and rear interference rejection.
- Improved resonances when raised by a quarter wavelength.

I built a balun using PVC and RG-8X, and the DX contacts confirmed the success of the build.

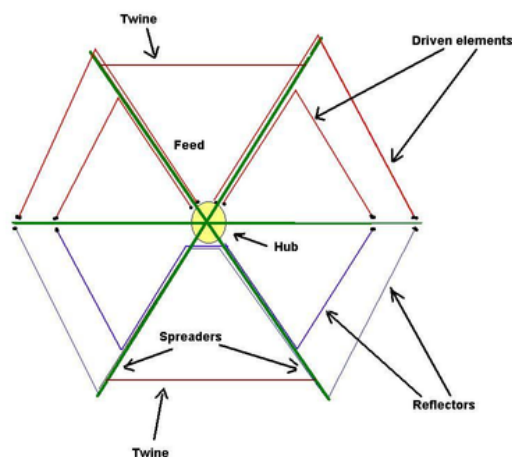




Step 4: Installation

On a glorious day, with friends and pulleys, we raised the tower. There was drama: the mast refused to fit into the top tube of the Rohn AG25, like trying to force a square peg into a round hole. Thanks to W8QMD and his adapter, we solved the problem.

The final installation was perfect—SWR tuned, and the first contacts made: DU2 and BX5 at low power. The signal outperformed my old loop by 3–5S units, like going from a bicycle to a sports car. With a new rotor, the Hex Beam rotates effortlessly.



Conclusion

The Broadband Hex Beam performs excellently up to 1000W. After two years, the zip ties broke from Montana's sun; I replaced them with 3M tape and reinforced the spreaders with black paint. The antenna remained stable until I sold the ranch and donated it to a disabled ham in Missoula.

I highly recommend building one: with ready-made parts, it can be a one- or two-day project. For the more ambitious, a 6-band version is also possible.

73 from Salmon, Idaho, USA – NOXO. Happy DX!



Between the Dial and the Waterfall

By: SWR Editorial Team

The Magic of Amateur Radio Through Time

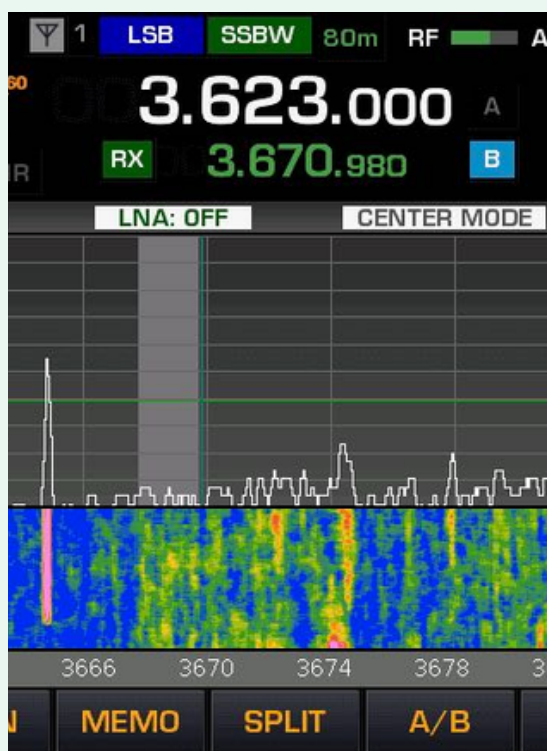
In amateur radio, each generation has its own way of exploring the bands. A few decades ago, operators would spend hours sweep by sweep, listening carefully to every signal, tuning the dial with patience, and proudly celebrating each completed QSO. It was an era when the ear and intuition were the most valuable tools for a radio amateur.

Goodbye, Classics: Patience and the Ear

Radios of the past didn't have sophisticated screens or spectrum analyzers just an S-meter and a good antenna. Hunting DX was an art of patience:

- Every successful contact was a reward for hours of dedication.
- The thrill lay in discovering weak signals amid the noise, sensing propagation, and reading the band like an invisible map.

For many operators, this experience remains unforgettable and exhilarating—a direct link to the pioneers of amateur radio.



Modern Radios: The Power of the Waterfall

Today, many rigs include spectrum analyzers and waterfalls, allowing you to see the entire band activity in real time:

- Weak signals appear as bright-colored flashes.
- Open frequency gaps are detected instantly.
- Interference and spikes are identified immediately.

For modern hams, this means efficiency, precision, and speed—perfect for contests, DXing, and technical experiments. Propagation is no longer a mystery: the band comes alive on your screen.

Two Ways to Experience Amateur Radio

- Classics: they enjoy the hands-on challenge, the patience, and the thrill of listening for and hunting DX without visual aids.
- Moderns: they leverage advanced technology to optimize every QSO and analyze the band in real time.
- Both approaches have their virtues and limitations. The fascinating part is that amateur radio remains the same passion, even as the tools change: the goal is still to connect with another human being hundreds or thousands of kilometers away.

The Magic Lives On

The true magic of amateur radio isn't just in the technology. It lies in the patience, creativity, and passion of each operator. Every QSO completed, every DX achieved, reminds us that amateur radio is a bridge between generations, connecting the nostalgic with the modern, and showing that in this hobby, excitement is always just a signal away.





SCHEDULED EVENTS AND ACTIVITIES IN JANUARY 2026

📌 Conventions, Hamfests, and In-Person Events

- Marathon Winter'fest – Amateur radio fair in Marathon, New York (USA), on January 10, 2026.
- Winter Tailgate Swapfest – Amateur radio swap and gathering, January 24, 2026 (typically held in Albuquerque, NM).
- HRAC Winterfest – Harrisburg, Pennsylvania, January 10, 2026 (small admission, swap tables, and hamfest atmosphere).
- SELARC 44th Annual Hamfest – Ponchatoula, Louisiana, January 17, 2026 (traditional hamfest with swap tables).

**SPECIAL
EVENTS**

📌 On-Air / Special Operations

- January 1 – AGCW Happy New Year Contest (international amateur radio activity celebrating the New Year).
- January 3 – Kid's Day (ARRL): special operation for young operators.
- January 4 – RTTY/ARRL Round-up: digital mode and phone contest.
- January 7–13 – WIAW/2 On The Air Operating Event: special station on the air all week.
- January 10 – Marathon Winter'fest (NY, USA): hamfest / amateur radio fair in Marathon, New York.
- January 17–19 – January VHF Contest (ARRL): VHF band contest.
- January 24–25 – Winter Field Day: annual field emergency communications exercise (participation from multiple clubs and locations).
- January 25 – Winter V-UHF Contest (Spain) and other international CW and phone contests (part of the URE calendar).

By: Abimael Padro KP4RY

RTTY

The Digital Mode That Made Amateur Radio History

A Bit of History

RTTY (Radio Teletype) is undoubtedly the most iconic digital mode in amateur radio. Its origins trace back to teletype systems used in commercial and military communications during the first half of the 20th century. As these machines became obsolete, hams adopted and adapted them, turning them into tools for experimenting with text transmission over HF radio. Long before personal computers existed, RTTY was already proving that radio could go beyond voice and Morse code.

The Operator's Experience

My experience with RTTY has always been defined by patience and attention to detail. It wasn't just "making a contact," but understanding why one signal decoded properly while another didn't. Adjusting the shift, fine-tuning the tones, and battling QRM were natural parts of each QSO. The characteristic RTTY sound through the radio's speaker became a companion during long sessions, especially on bands like 20 and 40 meters. Each successful contact brought a unique satisfaction, because the operator truly felt mastery of the mode.

RTTY reminds us that amateur radio is built character by character, with patience and passion.

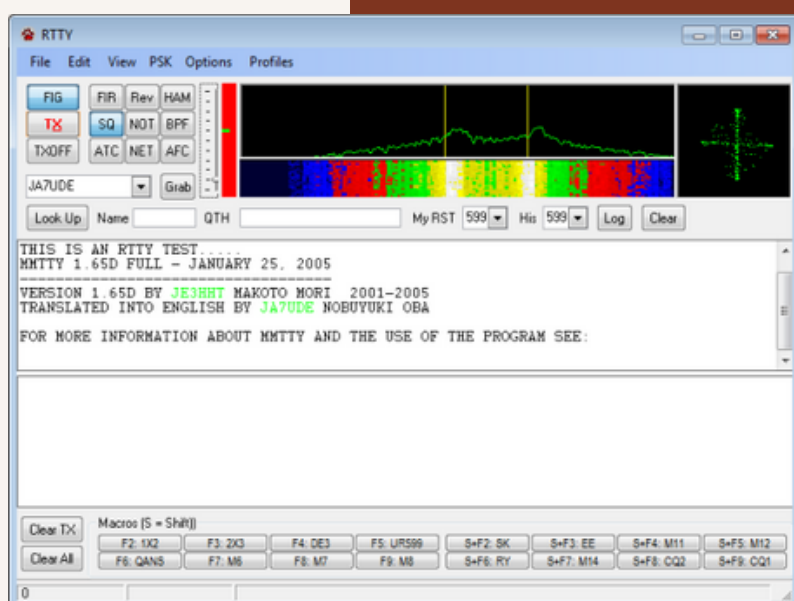


Photo by: commcat.com



Photo by: hamradioprep.com



How is RTTY Used Today?

Nowadays, RTTY is primarily operated using computers and decoding software, with simple interfaces connecting the radio to the computer. The most common standard in amateur radio is 45.45 baud, with a 170 Hz shift and Baudot encoding. It is mostly used on HF, on well-defined frequencies and respecting bandwidth, since RTTY occupies more space than many modern digital modes.

Although more sensitive modes exist today, RTTY remains very popular in contests, where the operator's skill makes all the difference. It leaves no room for tuning or adjustment errors, demanding careful and technical operation.

Why Return to RTTY

Returning to RTTY is reconnecting with the essence of digital amateur radio. It's a mode that requires listening, judgment, and an understanding of propagation. In an era dominated by automation, RTTY puts control and responsibility back in the hands of the operator. It doesn't matter if the station is modest or the antenna isn't perfect; what counts is operator skill.

I encourage both veteran and new hams to rediscover RTTY—not just as a historical mode, but as a living experience that still has much to teach. As long as characters flow across the bands, the spirit of amateur radio will remain alive.

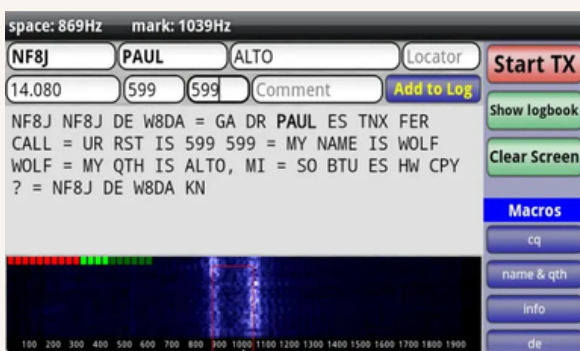


Conclusion

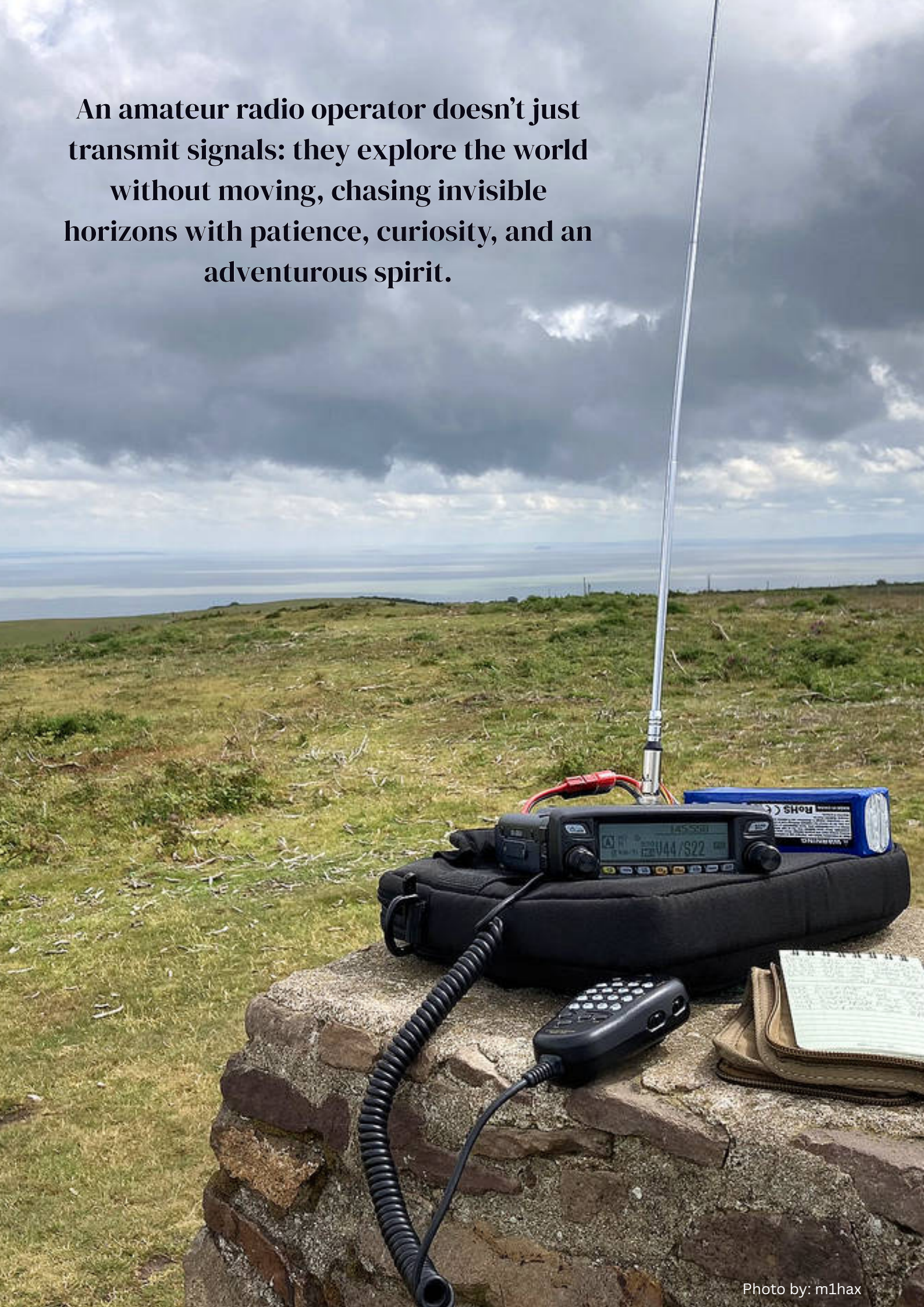
RTTY is not just an old digital mode; it is a living reminder of what it means to be a radio amateur. It is patience amid noise, discipline in tuning, and satisfaction in every character correctly decoded. In a world where technology tends to simplify everything, RTTY invites us to understand, listen, and operate with intention.

Practicing RTTY today honors those who paved the way for digital modes while reaffirming our own skills as operators. No matter how modern the equipment or how modest the station, when an RTTY signal crosses oceans and returns as readable text, the magic remains the same.

Returning to RTTY is returning to the roots. It is a reminder that amateur radio is measured not just in contacts, but in experiences, learning, and passion. As long as a teletype—real or virtual—is sounding on the bands, the heart of amateur radio will keep beating... character by character.



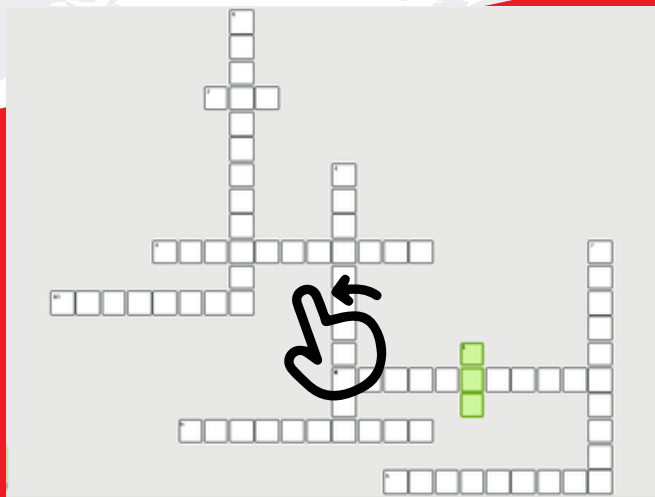
**An amateur radio operator doesn't just
transmit signals: they explore the world
without moving, chasing invisible
horizons with patience, curiosity, and an
adventurous spirit.**



The Laugh Shack

FUN WAVE

Test Your Knowledge: Tap the Crossword



QSL with Humor

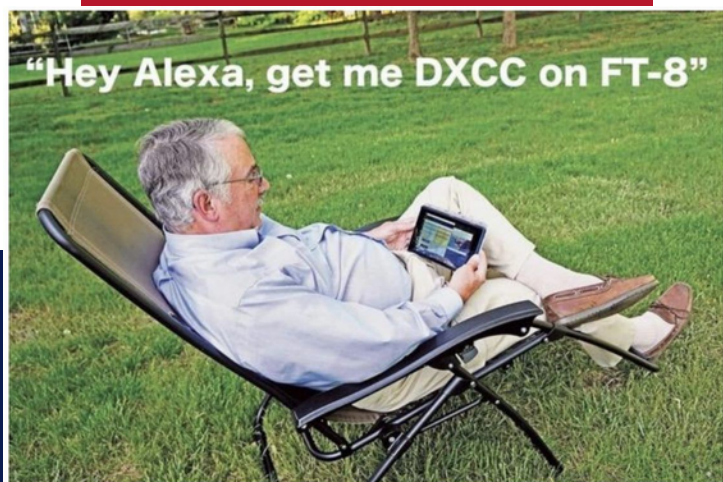
-Baofengs are great... unless you have the gear to tell you otherwise.

Optimistic ham:

— "It's not QRM... it's ambient music."

Why don't hams ever get lost?

☞ Because they're always on the right frequency!



Here, antennas may fail... but a good sense of humor always makes contact.

IS THE FT-897D STILL RELEVANT TODAY?

Strong.
Reliable.
Tireless.



Foto de.

If you're looking for a tireless all-rounder, the FT-897D is still a safe bet.

By: SWR Editorial Team



Features:

- **Full Coverage:** HF, 6m, 2m, and 70cm
- **Modes:** SSB, CW, AM, FM, and digital
- **Ruggedness:** solid construction, built to withstand heavy use
- **Reliable Reception:** clear, stable, and dependable
- **True Portability:** compact size and reasonable weight

A Classic That Refuses to Fade

In the world of amateur radio, some equipment disappears over time... while others simply become legends. Among the latter is the Yaesu FT-897D, a radio that defined an era and still sparks conversation, nostalgia, and respect. More than 20 years after its release, the question remains: is it still worth it in 2026?

A Design Born for Adventure

Introduced in the early 2000s, the FT-897D was part of a golden generation of multiband/multimode radios. Compact, rugged, and surprisingly versatile, this rig won the hearts of thousands of operators for a very simple reason: it could do it all.

Its "portable box" design made it ideal for:

- Field operations (POTA, SOTA, DXpeditions)
- Mobile stations
- Emergency centers
- Fixed stations for those seeking an "all-in-one" setup without taking up much space

Additionally, it offered a unique feature for its time: the option to install FNB-78 internal batteries, making it one of the few HF rigs capable of fully autonomous operation without external power.



A Classic That Never Fails:
The FT-897D still stands
tall where others fall short.



The FT-897D is one of
those radios that, even
without modern
technologies, continues to
earn a spot on any
operator's desk thanks to
its durability, versatility,
and the peace of mind
that comes from knowing
it will never leave you
halfway through a
contact.

The FT-897D shares its DNA with the FT-857D, but features a larger chassis, better-distributed controls, and a presence aimed at operators who want portability without sacrificing ergonomics.

What keeps it relevant today?

The Yaesu FT-897D remains relevant because it is an extremely reliable radio, ideal for emergencies and perfect for field activations, thanks to its robust, efficient, and straightforward design. Its simple operation—without touchscreens or complex menus, makes it practical and functional even today.

But... it also has limitations

Its basic display, limited DSP, lack of modern features (USB, digital audio, Wi-Fi, Bluetooth), and higher power consumption compared to current SDRs reveal its age against new technologies.

Is it worth it in 2026?

Yes, if you're looking for a rugged, reliable, all-terrain rig—perfect for POTA, SOTA, and emergency operations. It's not the best choice if you need waterfall displays, advanced DSP, integrated digital modes, or modern connectivity.

Conclusion

The FT-897D doesn't compete with today's SDRs, and it doesn't need to. Its true value lies in durability, versatility, and performance under demanding conditions. It's a reminder that amateur radio isn't always about the newest gear, but about what works when you need it most.



EXPERIMENTING IS HONORING
THE AMATEUR RADIO
TRADITION.

Photo by: ACOC

The Art of Building Your Own Antenna: My Experience with the 12 m and 17 m Yagi

By: Julio Mercado, WP4PUX

I've always felt a special attraction to the WARC bands, those hidden gems of the spectrum that many hams tend to overlook. From my earliest days in this hobby, I dreamed of having an antenna that would let me work 12m and 17m efficiently, but not a store-bought, ready-to-go antenna. I wanted something that carried the true spirit of amateur radio: experimentation, patience, and the satisfaction of building with your own hands.

I confess, the easiest option would have been to buy a commercial antenna and be done with it. But something inside me insisted that authenticity can't be bought



THE MAGIC OF RADIO IS IN YOUR HANDS

With a 17-foot boom and the idea of a two-band Yagi, I dove into this project. Each element was carefully calculated and isolated, fed directly through a single 50-ohm coax. I wasn't alone: José, NP4ET, joined the adventure, modeling every detail in 4NEC2. Together we analyzed lengths, spacings, and radiation patterns, making sure the antenna not only worked but embodied elegance through simplicity and precision.

The construction was a return to the classic days of amateur radio, when operators were engineers, dreamers, and craftsmen all at once. Solder joint after solder joint, adjustment after adjustment, the project came to life. Every SWR test, every signal rising on the meter, was a reminder that the magic of radio isn't just in the air, it's in the hands that make it possible.



I remember with particular fondness those reflective moments working under the sun, measuring and adjusting each element. We talked about our first rigs, the radios that marked our youth, and how, even as technology advances the thrill of hearing the first signal on an antenna you built yourself remains unparalleled. Those memories and conversations were the true fuel that made this project more than just technical: it was a journey through time.

Finally, seeing the antenna operate with a 1:1 SWR on both bands was a moment I will never forget. It was more than a technical achievement: it was a testament to patience, collaboration, and passion. Every QSO I make today on 12 or 17 meters carries a piece of history, a tangible reminder of what it means to experiment and build, of what it truly means to be a ham radio operator.

To those dreaming of their own antennas, I say: don't fear taking the traditional path. The satisfaction of hearing your signals soar through the air, thanks to your effort and dedication, is incomparable. That, my friends, is the essence of amateur radio: creating, dreaming, and keeping alive the passion that connects us to the world and to ourselves.



A Technical Project for Amateur Radio Operators

Crystal AM Receiver

By: Israel Cabrera KP4AX

Abstract

This article presents the design, construction, and operation of a passive AM crystal receiver, a classic project in amateur radio and electronics education. Using discrete components and no external power sources, the receiver enables a hands-on understanding of radio-frequency (RF) principles, resonant tuning, and amplitude modulation (AM) detection. It is ideal for both radio amateurs and students seeking to strengthen their technical foundation.

Introduction

AM (Amplitude Modulation) broadcasting represents one of the historical pillars of telecommunications. Although digital systems and software-defined radios (SDR) dominate today's landscape, the crystal receiver retains

extraordinary pedagogical value. Its simplicity makes it possible to observe—almost without abstraction—how an electromagnetic signal captured by an antenna can be transformed directly into audible sound.

Within amateur radio, projects of this nature encourage experimentation, RF circuit analysis, and a deep respect for the fundamentals that gave rise to modern radio.

Theory of Operation

Theory of Operation

The heart of the receiver is an LC resonant circuit, formed by an inductor (L) and a variable capacitor (C). This circuit acts as a selective filter that allows tuning to a specific frequency within the AM band. The resonant frequency is calculated using the expression:

$$f = \frac{1}{2\pi\sqrt{LC}}$$

Where:

- f is the frequency in hertz (Hz)
- L is the inductance in henries (H)
- C is the capacitance in farads (F)

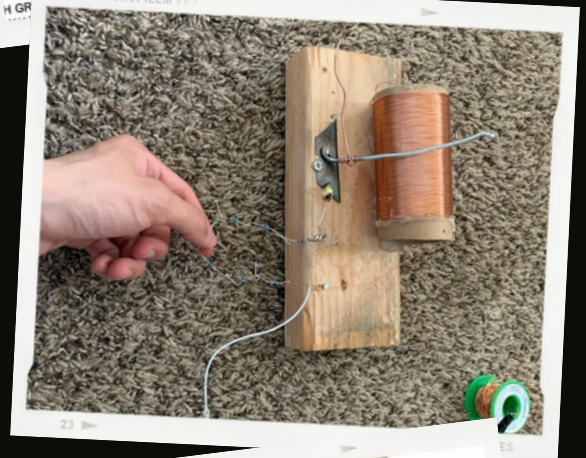
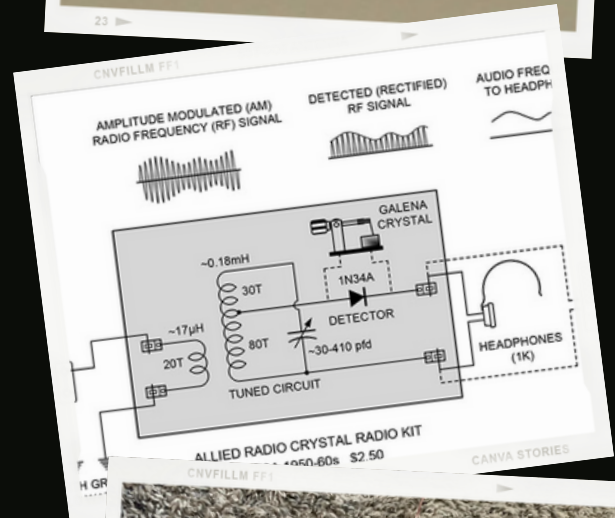
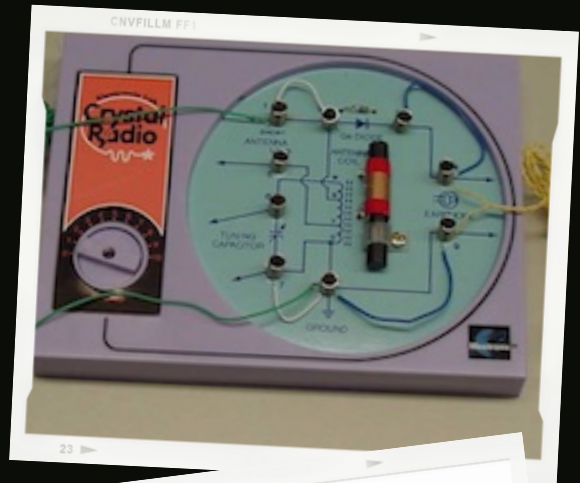
Once the desired signal is selected, a germanium diode (chosen for its low forward conduction voltage) acts as a detector, rectifying the RF signal and extracting the audio envelope. High-impedance headphones convert this signal into audible sound, using only the energy captured by the antenna.

Parts List

- Long-wire antenna: 20 to 50 feet
- Inductor coil: 60–100 turns, enameled wire #22–#26
- Variable capacitor: 365 pF
- Detector diode: 1N34A (germanium)
- High-impedance headphones: > 2 kΩ
- True earth ground (ground rod or metal piping)

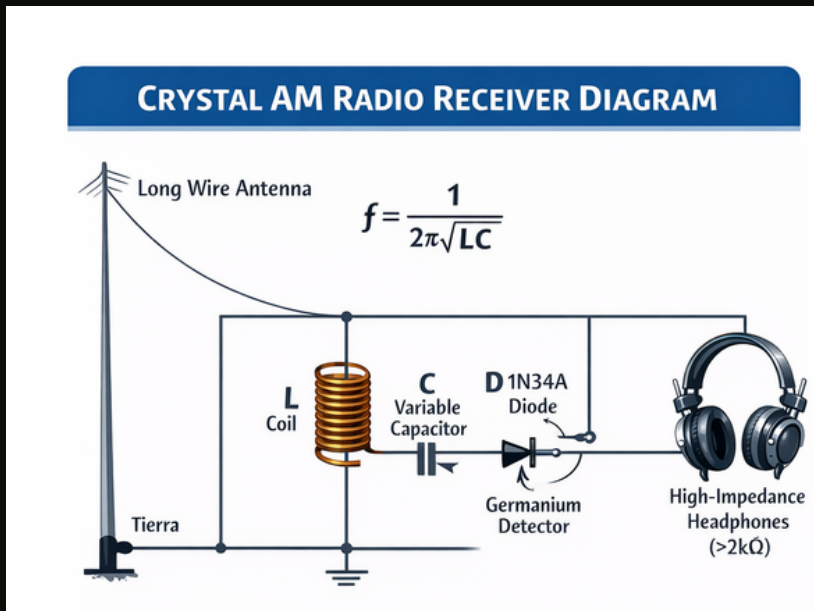
Receiver Construction

The coil is wound on an insulating form (PVC, phenolic cardboard, or acrylic), keeping the turns uniform and evenly spaced. An intermediate tap may be...



...added to allow experimentation with different antenna impedances.

The variable capacitor is connected in parallel with the coil, forming the tank circuit. The diode is connected in series with the headphones, and the circuit return is tied to an effective ground an element critical for good performance.



- L: Inductor coil
- C: Variable capacitor
- D: Germanium diode



Figure 2 – Coil Construction

It is recommended to secure the wire with varnish or electrical tape to prevent mechanical movement that could affect tuning.

Performance and Results

With an adequate antenna and a good ground connection, the receiver is capable of picking up local AM stations with surprising clarity for a completely passive system. Selectivity and volume will depend directly on antenna length, ground quality, and the efficiency of the detector diode. This behavior demonstrates the efficiency of the design and validates the fundamental principles of AM reception.

Conclusion

The crystal-type AM receiver is far more than a simple experiment: it is a gateway to a deep understanding of radio-frequency principles. Its construction reinforces essential concepts such as resonance, detection, and impedance matching. For modern amateur radio, this project remains an invaluable educational experience that connects theory with practice and honors the origins of our passion for radio.

**Reach the summit, raise your signal, and
connect with the impossible.**





DX CLUSTER

THE DIGITAL DX CAMPFIRE

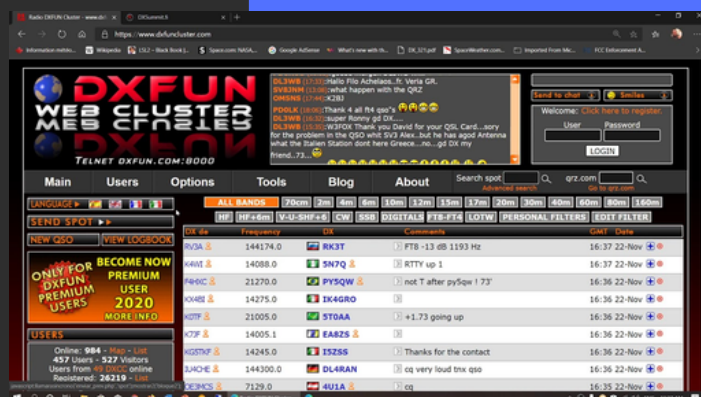
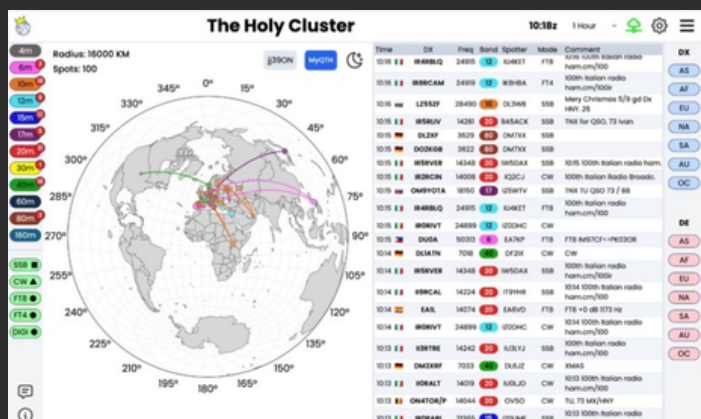


By: SWR Editorial Team

In today's world of amateur radio, few tools have transformed the way we "hunt" DX as much as the DX Cluster. Whether you're chasing a new country, a rare grid square, or trying to boost your contest rate, clusters can be a significant advantage—provided they are used skillfully and, above all, ethically.

What is a DX Cluster?

A DX Cluster is a real-time reporting network where amateur radio operators share what they are hearing on the air. A "spot" typically includes the station heard, frequency, mode, time, and a brief comment (for example, "up 2" if operating split). This information is distributed among nodes and reaches thousands of operators via websites, apps, or logging programs—often within seconds.



How and Why Did They Emerge?

Clusters emerged in the late 1970s and early 1980s, driven by packet radio networks. Their purpose was simple: to help operators find DX more quickly and allow the community to "read" propagation by seeing which bands were active. With the advent of the Internet, the concept became global and nearly instantaneous.

What Are They Used For?

When used effectively, a cluster can help you:

- Find active DX without aimlessly scanning the dial
- Detect band openings (when multiple spots appear on the same band)
- Identify rare stations, IOTA, activations, and special events
- Get a quick overview of activity and trends





DX



Guide to Good Use

1. Listen first. Before calling, make sure you can actually hear the station and understand the pileup pattern.
2. Filter. Limit by band, mode, or region to avoid being overwhelmed.
3. Spot responsibly. Report only what you copy clearly and include useful notes (split, QSX range, “working EU,” etc.).
4. Avoid “spot noise.” Don’t repeat the same spot every minute: one correct spot is worth more than five duplicates.

Bad Practices to Avoid

The most criticized fault—especially in contests—is self-spotting (spotting your own callsign or asking someone to spot you). In most major contests, this violates rules, creates unfair advantage, and undermines trust in the system. Also avoid “guessed” spots or incorrect frequencies that waste everyone’s time.



When Should You Use It?

In daily operation, a DX Cluster is ideal for catching short openings or rare DX. In contests, use it according to the category you are participating in and in compliance with the rules you agreed to when registering. Remember that in some categories, cluster usage determines whether you operate assisted or non-assisted.

When used wisely, DX Clusters do not take away the excitement of DX... they simply help you find it, while keeping alive the sense of community that has always characterized amateur radio.

Conclusion

The DX Cluster is one of those tools that reflects the natural evolution of amateur radio: technology serving the passion for DX. It does not replace a trained ear, patience, or operator experience—it complements and enhances them. When used with discretion and ethics, it allows for better exploitation of propagation, sharing valuable information, and strengthening the sense of community that unites radio amateurs worldwide. In the end, true merit is not just appearing on a spot, but in knowing how to interpret the information, respect the rules, and enjoy the contact achieved through your own skill.



THE HAM RADIO ZONE

The distinction of “Distinguished Member of the Radio Club of America (RCA Fellow)” is one of the most prestigious honors in the world of wireless communications, awarded to individuals whose careers have made significant contributions to the advancement of the art, science, and service of radio. In November 2025, this distinguished honor was granted to Ángel M. Vázquez, WP3R, in recognition of a lifetime dedicated to extraordinary contributions that bridge professional science, public service, and amateur radio.



Born in Arecibo, Puerto Rico, and raised in Brooklyn, New York, Ángel Vázquez’s journey in the world of radio began early and evolved into a remarkable career. After graduating from the City University of New York, he worked as a radio engineer at WNYC before returning to Puerto Rico in 1977 to join the legendary Arecibo Observatory. There, his work spanned decades and multiple disciplines, from telescope operations and leadership in information technology to serving as Chief of Telescope Operations and Spectrum Administrator for the Puerto Rico Coordination Zone.



In amateur radio, Ángel’s impact is equally profound. A Volunteer Examiner for over 25 years, he was a pioneer in one of the first online licensing exam programs through GLAARG VEC. He led MoonBounce (EME) efforts at Arecibo, coordinated high-profile special event operations from the Observatory’s Control Room using the callsign KP4AO, and shared his expertise through presentations at Dayton Hamvention®, HamSCI, antenna forums, and RCA lecture series.

THE HAM RADIO ZONE

Beyond his technical achievements, Ángel has embodied the public service mission of amateur radio. Following Hurricane Maria, he provided eight consecutive weeks of emergency communications, supporting families and first responders between Puerto Rico and the continental United States during one of the island's most challenging periods.

Previously recognized as Puerto Rico's Ham of the Year, recipient of the Yasme Excellence Award, and Dayton Hamvention® 2021 Ham of the Year, the elevation of Ángel M. Vázquez to Distinguished Member of the Radio Club of America and his induction into the Heritage CQ Amateur Radio Hall of Fame represent a well-deserved acknowledgment of a career defined by service, leadership, and unwavering dedication to the advancement of wireless communications.



SWR Magazine is honored to pay tribute to Ángel M. Vázquez, WP3R, a true Fellow in every sense of the word.

Arecibo Observatory
The Largest Radio / Radar
Telescope on Earth !

GRID FK680J

WP3R

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Photo by: hb9cqk